Parts

Contents

INSTRUCTIONS-PART LIST

308778

Rev. C
Supersedes B

GRACO

First choice when quality counts.™

This manual contains important warnings and information.
READ AND KEEP FOR REFERENCE.

INSTRUCTIONS

G3000 Volumetric Fluid Flow Meter

4000 psi (28 MPa, 276 bar) Maximum Working Fluid Pressure

Part No. 239716

0.02 to 1.0 gpm (75 to 3800 cc/min.) Flow Range

Recognized Component

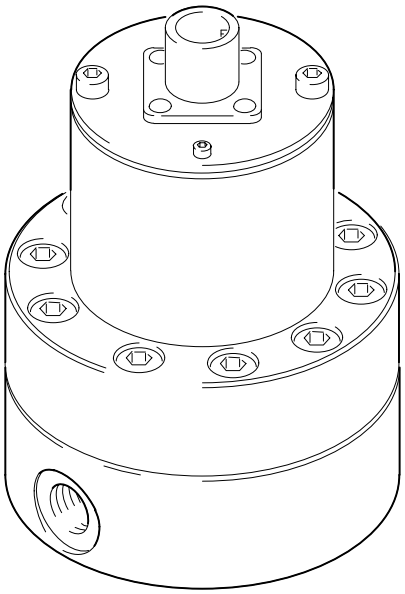
Conforms to ANSI/UL standard 2279

Certified to CAN/CSA 22.2 No. E79–11–95

EExia II A T4

98D.123385

*



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Intrinsically Safe for Hazardous Locations (Class I; Division 1; Group D) when used with an approved barrier only.

* *CE mark approvals only apply to meters used as part of Graco ProMix and PrecisionMix II Systems.*

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Table of Contents

Warnings 3
Installation 4
Operation 6
Troubleshooting 7
Maintenance 9
Flow Meter Parts 11
Dimensions 12
Technical Data 13
Pressure Drop Curve 13
Warranty . . . . . Back Cover
Graco Phone Number . . . . . Back Cover

Symbols

Warning Symbol

⚠ WARNING

This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

Caution Symbol

⚠ CAUTION

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

⚠ WARNING

INJECTION HAZARD

Spray from leaks, or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Splashing fluid in the eyes or on the skin can also cause serious injury.

- Fluid injected into the skin might look like just a cut, but it is a serious injury. **Get immediate medical attention.**
- Do not stop or deflect fluid leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** on page 6 whenever you: are instructed to relieve pressure; stop operation; or clean, check, or service the equipment.
- Tighten all the fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn, damaged, or loose parts immediately.

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

Improper grounding, poor air ventilation, open flames, or sparks can cause a hazardous condition and result in fire or explosion and serious injury.

- Ground the equipment as instucted in **Grounding**, page 5.
- Never use the flow meter with an electrostatic gun isolation stand.
- Keep liquids away from the electronic sensor device.
- Follow the material supplier recommendations when flushing or servicing the meter.
- Do not service the electronic sensor. Return it to your Graco distributor for service.
- If there is any static sparking while using the equipment, **stop spraying immediately**. Identify and correct the problem.

EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture, malfunction, or start unexpectedly and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are uncertain about usage, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check the equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. This equipment has a **4000 psi (28 MPa, 276 bar) maximum working pressure**.
- Use fluids or solvents that are compatible with the equipment wetted parts. See the **Technical Data** section of all the equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Comply with all applicable local, state and national fire, electrical and other safety regulations.

Installation

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD
To reduce the risk of fire, explosion, or electric shock:

- All electrical equipment must only be installed by a qualified electrician.
- Understand and follow your local code and safety regulations for hazardous location wiring of intrinsically safe circuits.

Dust and Foreign Matter

Avoid having dust or foreign matter enter the flow meter by taking the following precautions:

- Thoroughly flush the fluid supply lines before installing the flow meter.
- When installing fittings, make sure that no sealing tape overlaps into the inside of the pipe.
- Install a 100 mesh fluid filter upstream of the flow meter.

Installing the Flow Meter

- Flow volume can only be measured at the location where the flow meter is installed.
- The G3000 Fluid Flow Meter is intrinsically safe for Class I; Division 1; Group D hazardous indoor (NEMA 1) locations when installed with an intrinsically safe power device and wiring.

  Refer to ANSI standards ISA-RP12.6, NEC Article 504 and the Canadian Electrical Code Appendix F.
- Do not use more than 200 ft. (61 m) of cable.
- Refer to Fig. 1 to locate and install the flow meter, connectors, and fluid shutoff valves. Install a check valve to prevent backflow. The arrows on the flow meter and check valve show the direction of fluid flow.
- The shutoff valves allow you to isolate the meter for service.
- Refer to the **Technical Data** and **Dimensional Drawings** for dimension, inlet/outlet size, temperature and other specifications.

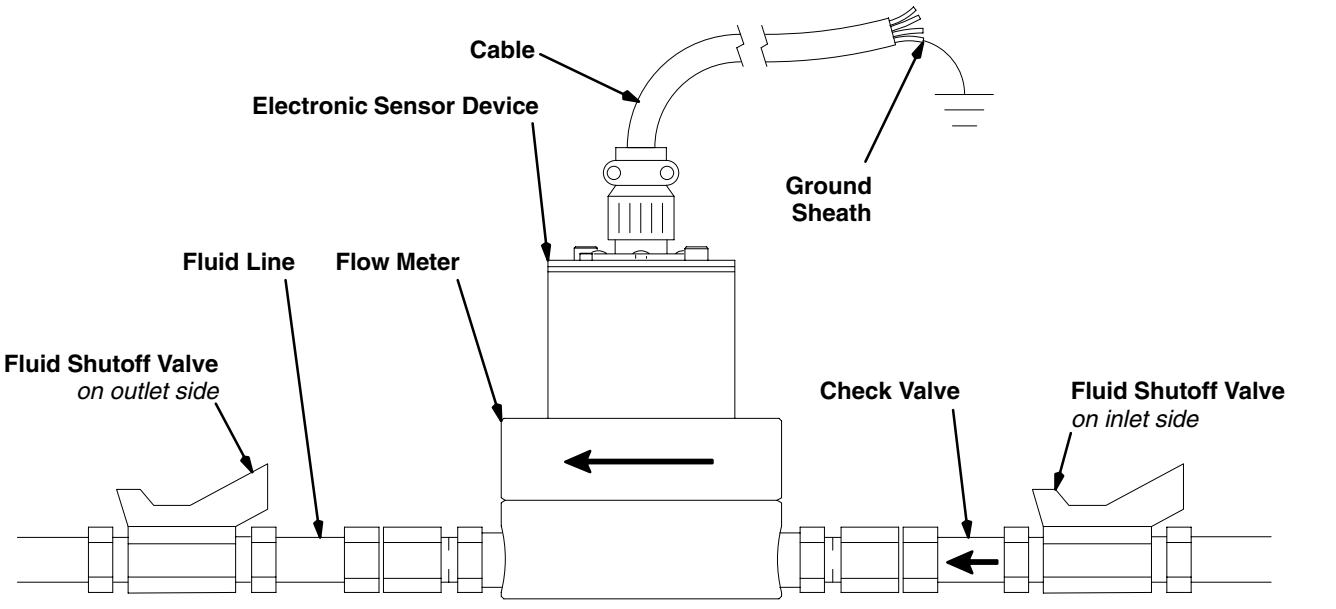


Fig. 1

Installation

Grounding

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD
Proper electrical grounding of your system is essential. For your safety, read the warning section, **FIRE, EXPLOSION, OR ELECTRIC SHOCK HAZARD**, on page 3.

1. Ground the flow meter by connecting a grounded cable to the sensor.

   Have a qualified electrician check the electrical grounding continuity between the flow meter sensor and a true earth ground; remove the cable connector from the sensor and measure the resistance from the cable connector Pin B to true earth ground. Refer to Fig. 2.

   If the resistance is greater than 25 ohms, check the cable ground connection. Refer to Fig. 2. Reconnect the ground sheath or replace the cable. Do not operate the system until the problem is corrected.

2. Always ground the fluid supply unit, using one of the following options:

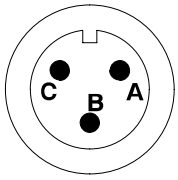
   a. Mount the meter to a grounded conductive surface, or

   b. Connect the conductive fluid hose to the meter inlet and outlet, or

   c. Connect a ground wire to the meter's M6 mounting holes.

3. Never use the flow meter with an electrostatic gun isolation stand.

Cable Connector *(Solder Side)*



A +10–30 Vdc Supply *(red)*
B Ground *(black)*
C Signal Out *(white)*

Fig. 2 7380A

Operation

Pressure Relief Procedure

⚠ WARNING

INJECTION HAZARD
The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. Fluid under high pressure can be injected through the skin and cause serious injury. To reduce the risk of an injury from injection, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

- are instructed to relieve the pressure,
- stop spraying,
- check or service any of the system equipment.

1. Turn off the fluid supply to the meter.
2. Shut off all electrical power to the fluid system.
3. Follow the Pressure Relief Procedure for your fluid system dispensing device.

Flow Meter Function

This is a positive displacement, gear flow meter. The gear flow meter is highly accurate, even with low flow rates. The fluid flowing through the meter rotates the gears. The gear tooth is picked up by a sensor device, which produces an impulse for every gear tooth passing by.

Recommended Usage

⚠ WARNING

COMPONENT RUPTURE HAZARD
Do not exceed the maximum working pressure of your meter or any component or accessory in your system.

- See the **Technical Data** for fluid and ambient temperature limits.
- Only use the flow meter with fluids that are compatible with the “Wetted Parts” listed in the **Technical Data**.

Flow Volume Range

The G3000 meter flow volume range is 0.02–1.0 gal./min. (75–3800 cc/min.).

⚠ CAUTION

The flow meter gears and bearings can be damaged if they rotate at too high a speed. To avoid high speed rotation, open the fluid valve gradually. Do not over-speed the gear with air or solvent. To prolong meter life, Do not use the meter above its maximum flow rate.

Checking the Meter Accuracy

1. To check the accuracy of the meter, turn your gun fan and atomizing air off, then trigger the fluid into a graduated cylinder; dispense at least 500 cc of fluid.
2. Measure the volume of fluid in the beaker in cubic-centimeters (cc) and read the volume on the flow meter monitor.

   If the flow meter scale factor is not between 0.112–0.140 cc/pulse, follow the cleaning procedure on page 10, then recalibrate the flow meter.

Troubleshooting

⚠ WARNING

INJECTION HAZARD
To reduce the risk of an injection injury or other serious injury, follow the **Pressure Relief Procedure** on page 6 before checking or servicing the meter assembly.

NOTE: The sensor is not a serviceable part. Replace it if it is malfunctioning.

Problem	Cause	Solution
No flow volume displayed at monitoring unit	Flow volume is too low to measure	Increase flow volume.
	Fluid is not flowing	See **Problem:** Fluid is not flowing, below.
	Damaged cable	Replace cable.
	Improper input voltage to sensor	Make sure input power is 10–30 Vdc.
	Damaged sensor	Replace sensor if it is malfunctioning.
Fluid is not flowing	Clogs in fluid line or in meter	Clean fluid line and/or meter; see **Maintenance** section.
	Gears worn or damaged	Service meter; see **Maintenance** section.

Notes

Maintenance

⚠ WARNING

FIRE AND EXPLOSION HAZARD
If the meter is not installed in an intrinsically safe installation, make sure the power is off or the electronic sensor is disconnected before wiping the outside of the meter clean with a cloth dampened in a compatible solvent or flushing the meter.

⚠ CAUTION

Do not immerse the meter in solvent with the electronic sensor installed. Solvent could damage the electrical components.

Air purge is not recommended for any gear-type flow meter. Air purges do not provide the lubrication the meter gears require.

Residue Build-up on the Meter Gears

Residue build-up may cause the meter gears to bind or stop rotating, which decreases the meter accuracy and makes meter recalibration necessary. As more build-up occurs, recalibration is required more often.

The frequency that your meter requires cleaning depends on the type of fluid being used. Excessive residue build-up usually means that you are using improper cleaning solvents and/or cleaning sequences or processes.

- Check the meter routinely to develop the correct cleaning schedule.
- Use the proper cleaning solvent for the fluid being metered.

Flushing the Meter

⚠ WARNING

INJECTION HAZARD
To reduce the risk of an injection injury or other serious injury, follow the **Pressure Relief Procedure** on page 6 whenever you are instructed to relieve pressure.

Flush the fluid supply line and meter fluid reservoir daily with a compatible solvent as instructed below.

1. Follow the **Pressure Relief Procedure**, on page 6.
2. Connect the fluid line to the solvent supply unit.
3. Flush the meter until it is clean.
4. Follow the **Pressure Relief Procedure**, then disconnect the fluid line from the solvent supply unit.
5. Reconnect the fluid line to the fluid *(paint)* supply.
6. Turn on the fluid supply.
7. Operate until the meter and fluid line are free of solvent.

Maintenance *continued on next page.*

Maintenance

Cleaning or Servicing the Meter Chamber

⚠ WARNING

INJECTION HAZARD
To reduce the risk of an injection injury or other serious injury, follow the **Pressure Relief Procedure** on page 6 whenever you are instructed to relieve pressure.

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD
Installing and servicing this equipment requires access to parts that may cause electric shock or other serious injury if the work is not performed properly. Do not install or service this equipment unless you are trained and qualified.

Use only genuine Graco replacement parts. Substitution of components may impair intrinsic safety. This could result in a failure which causes serious injury and/or substantial property damage.

NOTE: Clean and service the meter at a clean workbench. Use only lint-free cloth on parts.

1. Follow the **Pressure Relief Procedure**, on page 6. Then close the fluid shut-off valve on each side of the meter.

2. Disconnect the cable from the electronic sensor device.

3. Disconnect both fluid line fittings and remove the meter from the fluid line.

4. Loosen the two screws (1) and remove the electronic sensor device (2) from the flow meter upper housing (5). See the parts drawing, page 11.

5. Loosen the screws (4). Keep a few threads of two opposing bolts engaged to minimize the torque stress on the shafts when you separate the meter housings.

6. Hold onto the upper housing (5) and gently tap the opposing bolts to separate the lower housing (11).

⚠ CAUTION

To avoid damaging the shafts (9), keep the housings parallel to each other when separating them; do not rock the housings from side to side. Do not use chisels or screwdrivers to split and pry apart the housings.

7. Remove and inspect the gears (8) and shafts (9). Clean the meter parts with solvent.

8. Reassemble the gears and shafts into the lower housing in the position they were removed from. Check the gears for free and easy rotation.

9. Make sure the two locating pins (10) are in place.

10. Assemble the two meter housings, making sure to keep them parallel to each other.

11. Install the screws (4). Tighten them oppositely and evenly, to 12 ft-lb (16 N•m). Do not over-tighten.

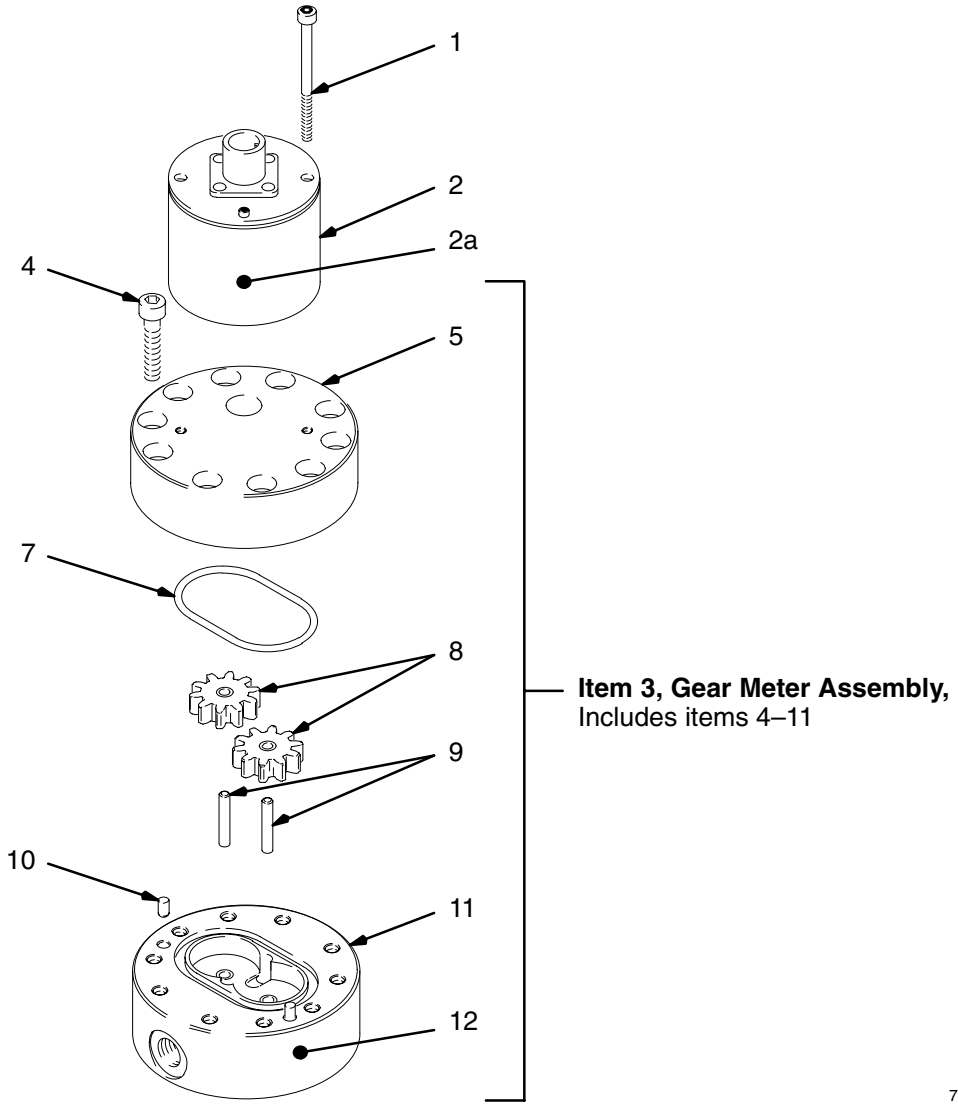
12. After re-assembling the meter, test the gear rotation by applying a brief air blast to the meter inlet. You should clearly hear the gears spin.

13. Set the electronic sensor (2) on the upper housing (5) and tighten the two screws (1) hand-tight, about 3.5 ft-lbs (4.7 N•m). Do not over-tighten.

Parts

Use Only Genuine Graco Parts and Accessories

Model G3000
Part No. 239716

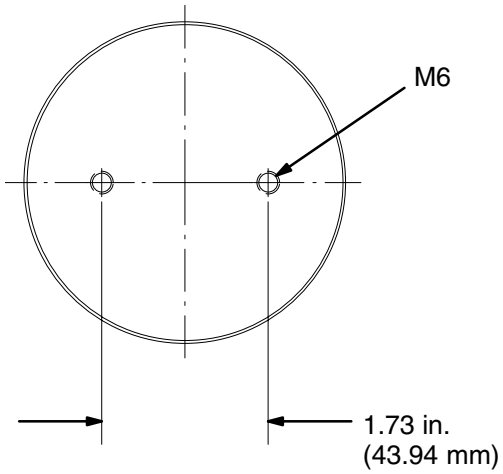


Ref. No.	Part No.	Description	Qty.
1	114100	SCREW, socket head; M4 x 55 mm long	2
2	239717	ELECTRONIC SENSOR; includes item 2a	1
2a	290580	• LABEL, identification	1
3	239719	GEAR METER ASSEMBLY; includes items 4–12	1
4	110580	• SCREW	10
5	*	• HOUSING, upper	1
7	110588	• O-RING; Teflon®	1
8	239718	• GEAR	2
9	192383	• SHAFT, gear	2
10	192387	• PIN, locating	2
11	*	• HOUSING, lower	1
12	290579	LABEL, identification	1

* *Not a replacement part. Order item 3, gear meter assembly.*

Dimensions

Flow Meter Mounting Holes
(BOTTOM VIEW)



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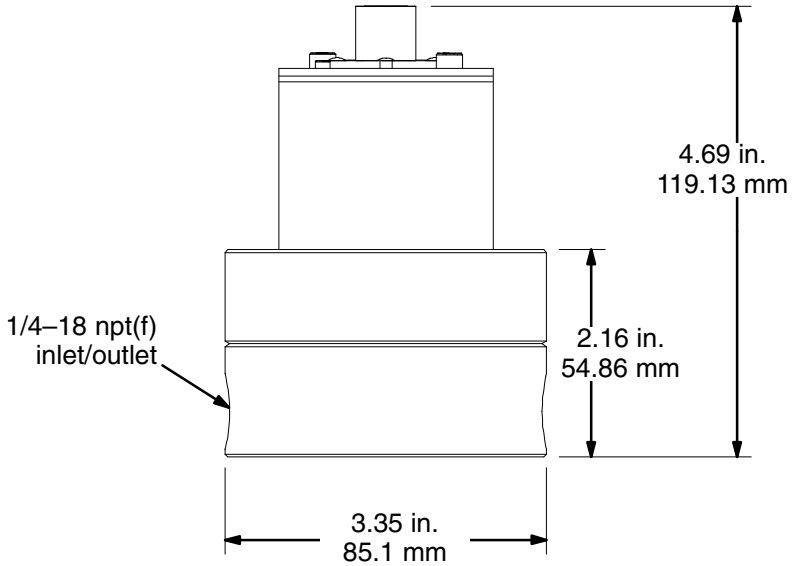

Weight: 6 lbs. (2.7 kg)

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Technical Data

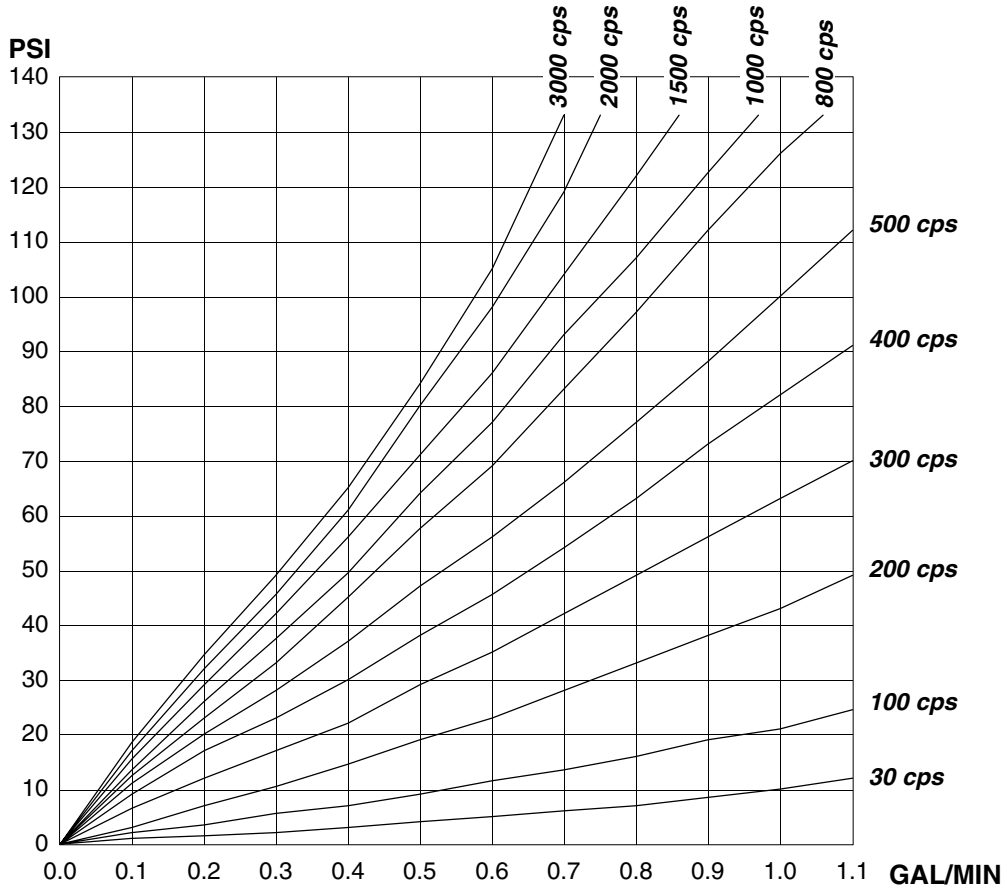
Category	Data
Maximum Working Fluid Pressure	4000 psi (28 MPa, 276 bar)
Flow Range	0.02–1.0 gal/min (75–3800 cc/min)
Fluid Temperature Range	40–180° F (4–80° C)
Maximum Ambient Temperature	180° F (80° C)
Fluid Viscosity Range	20–3000 cps (Refer to **Pressure Drop Curve**)
Maximum Cable Length	200 ft (61 m)
Flow Meter Inlet/Outlet	1/4 npt(f)
Resolution	≈ 0.119 cc/pulse
Accuracy	± 0.5 %*

Category	Data
Supply Voltage	10–30 Vdc
Intrinsic Safety	Class 1; Div. 1; Group D V max. = 30 V I max. = 15 mA Ci = 0.2 □f Li = 0mH
Approvals	See front cover
Wetted Parts	303 Stainless Steel, Tungsten Carbide, Teflon®

Teflon® is a registered trademark of the DuPont Company.

* For most commonly used coatings, the flow meter reading will be accurate to within ± 0.5%. Accuracy will diminish at low viscosities and low flow rates.

Pressure Drop Curve



Notes

Notes

The Graco Warranty and Disclaimers

Graco warrants all equipment listed in this manual which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. With the exception of any special extended or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance or structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, gas engines, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

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Manual Change Summary

Manual was revised per ECO V6733 to change the front cover.

Graco Phone Number

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you:
1–800–367–4023 Toll Free

All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.

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Foreign Offices: Belgium, Korea, Hong Kong, Japan

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